

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

a light source;~~and~~

a light directing member for directing incident light from the light source toward the reflector outwardly along an orthogonal direction, the light directing member including,

an upper surface and a lower surface parallel to each other, the lower surface having a plurality of convex portions extending from the lower surface, each of the plurality of convex portions having a substantially planar surface which is substantially parallel to the lower surface and a side surface connecting the substantially planar surface and the lower surface, and a side surface angle between the side surface of the each convex portion and a line perpendicular to the substantially planar surface is less than 5°, wherein the plurality of convex portions have the same side surface angle with each other, wherein light reflected along an orthogonal direction to the liquid crystal display device is uniform, wherein a ratio of the height to width of the plurality of convex portions is substantially about 1 to 2, and wherein a size of the plurality of convex portions increases with increasing distance from the light-source; source; and

a sidewall reflector surrounding the light directing member, and extending lower than the substantially planar surface of the plurality convex portions.

2. (Original) The device according to claim 1, further comprising:

a light reflecting member to guide light from the light source into the light directing member.

3-5. (Canceled)

6. (Currently Amended) The device according to claim 1, wherein the substantially planar surface of the each convex portion has a substantially circular shape.

7. (Currently Amended) The device according to claim 1, wherein the substantially planar surface of the each convex portion has a rectangular shape.

8. (Original) The device according to claim 1, wherein the plane surface of the plurality of convex portions has a bar shape extending perpendicular to a direction of light propagation in the light directing member.

9. (Currently Amended) The device according to claim 1, wherein a distance between the lower surface and the substantially planar surface of the each convex portion is less than 50 μ m.

10. (Currently Amended) A reflective liquid crystal display device, comprising:
a display panel including two substrates spaced apart, liquid crystal sandwiched between the two substrates, and a reflector to reflect light through the liquid crystal;

an auxiliary light source device for supplying light to the display panel, including,
a light source,

a light directing member for directing incident light from the light source toward the display panel, the light directing member having an upper surface and a lower surface parallel to each other, the lower surface having a plurality of convex portions, each having a substantially planar surface which is substantially parallel to the lower surface and a side surface connecting the substantially planar surface and the lower surface, a side surface angle between the side surface of the each convex portion and a line perpendicular to the substantially planar surface being less than 5°, wherein the plurality of convex portions have the same side surface angle with each other, wherein light reflected along an orthogonal direction to the display panel is uniform, wherein a ratio of the height to width of the plurality of convex portions is substantially about 1 to 2, and wherein a size of the plurality of convex portions increases with increasing distance from the ~~light-source; source, and~~

a sidewall reflector surrounding the light directing member, and extending lower than the substantially planar surface of the plurality of convex portions; and

a light reflecting member which guides light from the light source into the light directing member, said display panel being between said auxiliary light source and said light reflecting member.

11. (Currently Amended) An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

an upper reflective surface to reflect impinging light above a certain incidence angle;

a lower reflective surface parallel to the upper reflective surface, the lower reflective surface having a plurality of convex portions extending toward the reflector to direct light from the auxiliary light source device to the reflector outwardly along an orthogonal direction; ~~and~~

an entry surface connecting the upper and lower reflective surfaces through which light from a light source enters, wherein each convex portion includes a planar portion which is substantially parallel to the lower reflective surface and side surfaces connecting the planar portion with the lower reflective surface, and a side surface angle between the side surfaces and a line perpendicular to the planar surface portion is less than 5° , wherein the plurality of convex portions have the same side surface angle with each other, wherein light reflected along an orthogonal direction to the liquid crystal display device is uniform, wherein a ratio of the height to width of the plurality of convex portions is substantially about 1 to 2, and wherein a size of the plurality of convex portions increases with increasing distance from the ~~light source, source; and~~ a sidewall reflector surrounding the auxiliary light source device, and extending lower than the planar portions of the plurality of convex portions.

12-13. (Canceled)

14. (Currently Amended) The device according to claim 11, wherein the each planar portion is substantially parallel to the lower reflective surface.

15. (Currently Amended) The device according to claim 11, wherein a cross section of the each convex portion is substantially circular.

16. (Currently Amended) The device according to claim 11, wherein a cross section of the each convex portion is rectangular.

17. (Currently Amended) The device according to claim 11, wherein the each convex portion extends along substantially an entire width of the reflective liquid crystal display device.

18. (Original) The device according to claim 11, wherein the plurality of convex portions are spaced along the lower surface to ensure a uniform distribution of light along a length of the device.

19-20. (Canceled)

21. (Currently Amended) An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

a light source extending along a width of the reflector, to emit light along a length of the reflector; ~~and~~

a light directing device located above the reflector and adjacent to the light source to direct light from the light source to the reflector outwardly along an orthogonal direction such that a light distribution of light directed by the light directing device is substantially uniform along the length of the reflector, and such that the directed light is substantially perpendicular to the reflector, and the light directing device includes an upper surface, a lower surface parallel to the upper surface and a plurality of portions each extending from the lower surface toward the reflector at a 90° angle with respect to the lower or upper surface such that the light reflected outwardly along an orthogonal direction to the liquid crystal display device is uniform, wherein each portion includes a planar surface which is substantially parallel to the lower surface, wherein a ratio of the height to width of the portions is substantially about 1 to 2, and wherein a size of the plurality of portions increases with increasing distance from the light source. source;
and

a sidewall reflector surrounding the light directing device, and extending lower than the planar surfaces of the plurality of portions.

22-23. (Canceled)

24. (Currently Amended) The device according to claim 21, wherein each of the plurality of portions includes ~~[[a]]~~the planar surface parallel to a lower surface of the light directing device and connected to the lower surface by at least one side oriented substantially perpendicular to the lower surface.

25. (Previously Presented) The auxiliary light source device of claim 1, wherein the angle between the side surface and a line perpendicular to the planar surface is about between 0° and 10°.

26. (Previously Presented) The auxiliary light source device of claim 10, wherein the angle between the side surface and a line perpendicular to the planar surface is about between 0° and 10°.

27. (Previously Presented) The auxiliary light source device of claim 11, wherein the angle between the side surface and a line perpendicular to the planar surface is about between 0° and 10°.